REMARKS

The foregoing amendments in Claim 11: (i) expressly add the limitations appearing in claim 8; and (ii) add a new element, "an opening portion formed between the liquid crystal display element and the microlens array." Claim 8 is cancelled.

The present invention utilizes a microlens array to produce parallel rays of RGB light emergent from the array. This light is modulated (p. 31, lines 17-20) at a liquid crystal display element 13 that receives these parallel emergent rays. A black matrix 21 is interposed between the microlens array and the liquid crystal display element 13. The matrix 21 has "opening portions" 21R (p. 30, line 10), 21B (p. 31, line 8), and 21G (p. 32, line 16) for R (red), B (blue), and G (green) mutually parallel rays, as shown in Fig. 3. As noted at the bottom of page 31 and top of page 32, this construction increases the efficiency of the light use, making the display screen brighter. Also, the second lens 14 of the microlens array 1 makes the GB chief rays 15, 16 substantially parallel to the chief ray 3 of the red color, suppressing a spreading angle (divergence) of the light flux. This combination of features is not taught or suggested by the prior art, whether taken alone or in combination.

Applicants respectfully traverse the rejection of claims 8, 11 and 13 under 35 USC 102(a) as fully anticipated by Rekow U.S. Patent No. 6,773,142 or under 35 USC 103(a) as obvious over Tanaka et al. U.S. Patent No. 5,633,737 in view of Rekow '142.

Rekow (U.S. Patent No. 6,773,142) discloses an elongated microlens array having cylindrical microlens surfaces (see 104 and 106 in Figs. 5B and 6 of Rekow). Unlike the present invention, light rays which pass through the second cylindrical microlens array are not paralleled. Instead, they diverge in the direction of slow axis. Then the diverging rays are formed into converging parallel bundles of rays by a spherical lens 82 (see the description of lines 63 to 66 of column 6 and Fig. 3B, which also corresponds to Figs. 5A, 5B, and 6).

Rekow does not teach or suggest applicants' "opening portions" as claimed, formed between a microlens array and a liquid crystal display element. Nor does Rekow teach or suggest a liquid crystal display screen.

With respect to Tanaka et al., light beams of red, green and blue colors which were paralleled by the second microlens array are converged onto the transparent signal electrodes in relation to their respective colors. The signal electrodes are driven by picture signals that relate to the colors converged onto the respective electrodes such that the light beams of the respective colors are modulated in their intensity in accordance with the signals (see lines 7 to 9 in column 10 and lines 22 to 33 in column 12).

On the other hand, in the liquid crystal panel unit according to the present invention, the light flux of red, green and blue wavelength bands which are paralleled by the second microlens array are converged around the center of an opening portion of the black matrix, and the respective colors of red, green and blue transmitted by the black matrix are modulated in a liquid crystal panel pixel portion of the liquid crystal layer. This is supported by the descriptions of lines 23 to 25 on page 24 and line 6 on page 30 to line 3 on page 32 of the specification.

Therefore, the Tanaka reference is different from the present invention in that, as with Rekow, there is no black matrix with opening portions as claimed disposed between the microlens array and a liquid crystal display screen.

Applicants acknowledge that the non-elected claims are now withdrawn, and applicants' claim of priority is approved.

In view of the foregoing amendments and remarks, applicants urge that the pending claims patentably distinguish over the art of record and are otherwise in condition for allowance.

Dated: July 18, 2005

Respectfully submitted,

By _____

Peter J. Manus
Registration No.: 26,766
EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
(617) 439-4444
Attorney for Applicant